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# Bold because humble, humble because bold: Yann LeCun's Path

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*Some philosophical considerations over Yann LeCun's position paper "A Path Towards Autonomous Machine Intelligence"*

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Bold!

That is the word the MIT has chosen <sup>1</sup>to define the vision that Yann LeCun, Chief AI Scientist for Meta, recently unveiled in a position paper the like of which the AI industry was not accustomed to anymore.

In the paper the complete architecture of a "autonomous machine intelligence" is outlined:

- the modules it should be constituted of
- the role of each module
- the relation and the information flow between the modules

Furthermore, the paper also argues in favour of certain learning techniques versus others to achieve the training of the modules. All this sounds very bold in fact, and refreshing, especially considering some of the recent directions the AI industry seems to have taken, or to want to take. Let's examine three of these issues in some details:

## Neural Networks & Supervised Learning

Not surprisingly, it is in neural networks that the paper sees the future of machine intelligence. This is why and how some very traditional-AI (or GOFAI) ideas and approaches can be re-explored and hold new promises here. In fact the overall effect of the paper's thesis is **to bring Machine Learning firmly back into the Artificial Intelligence field**, correcting a drift which too many have embraced in sake of quick practical results.

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<sup>1</sup> [Yann LeCun's big bet for building intelligent machines | MIT Technology Review](#)

In an earlier work (Landi, 2020) we defined John McCarthy as a “philosopher who ignored he was one”, and we believe the same definition can be applied to Yann LeCun.

In 1996 McCarthy wrote:

*“The relation of AI and philosophy involves many concepts that both subjects include, for example, action, goals, knowledge, belief, and consciousness... Philosophical questions are especially relevant to AI when human-level AI is sought. However, most AI research since the 1970s is not aimed towards human-level AI but at the application of AI theories and techniques to particular problems.... I have to admit dissatisfaction with the lack of ambition displayed by most of my fellow IA researchers. Many useful and interesting programs are written without use of concepts common to AI and philosophy.... **Our way is called “logical AI” and involves expressing knowledge in a computer in logical languages and reasoning by logical inference, including nonmonotonic inference. The other main approach to AI involves studying and imitating human neurophysiology. It may also work.**”*

While LeCun’s paper does not go as far as proclaiming his proposed architecture as an imitation of human neurophysiology, the “studying” part is certainly there, as well as a suggestive figure where the human brain is portrayed laying behind the modules of the architecture. The path chosen here is obviously not “logical AI”, but the objectives and the aims are as serious as those that haunted McCarthy during all of his career. McCarthy would have probably NOT admitted dissatisfaction with regards to the content of this paper.

## **The comeback of representation**

Intelligence needs a world model, it needs representation. This is a point solidly assumed by the paper since the first pages. Representation of the world is one of those nightmares AI seems not to get rid of, and here at least the merit of the paper is to assume it rather than discard it as functionally useless or metaphysically dangerous. Of course to assume it means also to assume all the issues it brings with it, which at the bottom are purely philosophical (what is the existence status of the representation vs the represented, are there different levels of “existence”, what does it even mean “to exist?”), but in spite of all this it is clear that without representation and a world model there can be no abstraction, and with no abstraction “intelligence” is just an empty word.

This is because **in order to reveal itself intelligence needs to face the resistance of an outside world**, not just to overcome the complexity of mathematical calculations. If it runs away from this fight AI can only work (beautifully but meaninglessly) if the world continuously adapted to her, be it in the form of “synthetic data” or of predetermined environments (i.e. Floridi 2022, “What the near future of AI could be”).

## **AI Strong and weak**

From the examples above it is clear why the paper's vision can be seen as "bold". While most of the industry is making all possible efforts to reduce AI to its "weak" Searlian version for fear of customers' rejection, here the original objective of equaling human intelligence is explicitly assumed and proclaimed.

The question of conscience is prudently avoided, but perceptions and emotions are openly assumed as attainable by the proposed architecture. While the paper does not speculate about the potential for the architecture to encompass all aspects of human and animal intelligence, it certainly sets tasks far beyond those most AI researchers have in their horizon. In this respect it can be said to renew the original Turing question "can machines think?" which too often has been translated into the engineer's question "can thought be mechanized". And for this it can only be welcomed.

## **Conclusions: AI is "a continuation of Philosophy by other means"**

Of course nothing has been solved yet. No answer is on the table yet. Yann LeCun clearly tell us that it will take years to realize this architecture and its modules; worse yet, he tells us that for some of the modules there no clue as to how to build them, and that even the training methods for the modules may not be apt to the task.

So, one may ask, "what is all this about?"

We will not presume to answer for Yann Lecun of course. Our own conclusion is that this paper once more confirms what we have been saying since a long time, that AI is not a technology or a sum of technologies, but that it can only be defined as "a continuation of Philosophy by other means." (Landi, 2020)

Philosophical truths are not the same as scientific one. Its ways of working and its results are not judged by the same parameters. Success and failure also have a different meaning in Philosophy. In the case of AI it can be demonstrated that real technological advance of the discipline only come about when authentic philosophical examination is at work. And we believe Yann LeCun's paper can certainly be annoverated in this category.